

A Systematic and Open Exploration of FaaS Research

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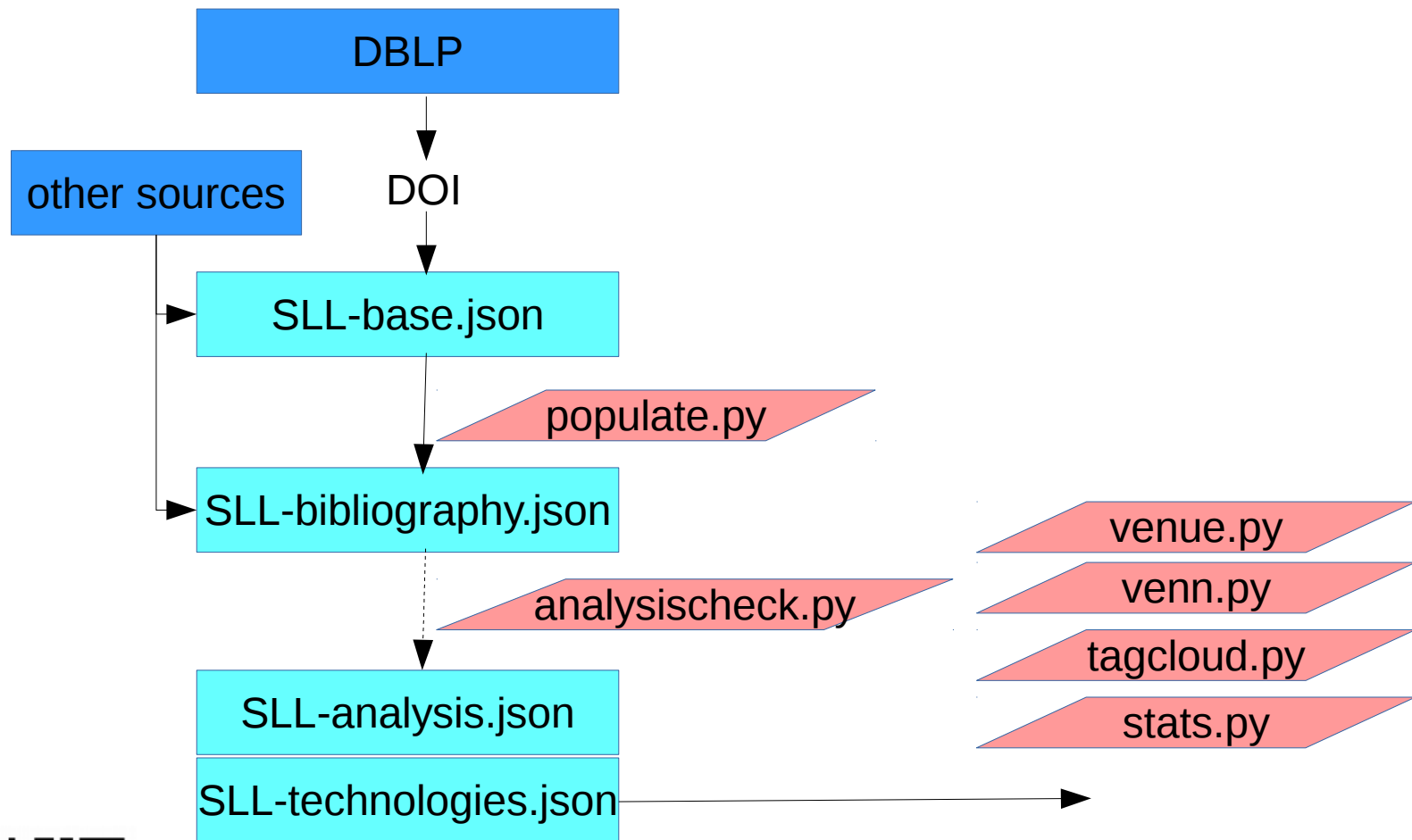
Traditional surveys

- 1) Identification of interesting field with insufficient knowledge
 - 1) e.g., FaaS/serverless computing
- 2) Scanning of literature
 - 1) Selection, filtering, statistical methods
 - 2) **Creation of body of knowledge? replicability?**
- 3) Reading selected works
- 4) Commonalities, differences, trends...
- 5) Writing survey paper
- 6) Go back to 1)

FaaS: prime time for first surveys



Our approach: dataset



Our approach: *collaborative* dataset



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An evolving and community-curated dataset to capture FaaS-related literature

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87 commits

1 branch

0 releases

2 contributors

Branch: **master** ▾

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spioGIT Merge pull request #1 from mohammed-all-1/master ...

Latest commit 89e97ef on 21 Nov

handcrafted	- updated Venn outputs	3 months ago
.gitignore	added venv, .env, and idea	a month ago
analysischeck.py	- technology spelling consistency check	3 months ago
doc.txt	- statistics about (simplified/merged) publication venues	3 months ago
missing-papers.txt	added missing-papers.txt file	3 months ago
populate.py	- stricter consistency checks	3 months ago
serverless-literature-analysis.json	added analyses for new papers	a month ago
serverless-literature-base.json	added new papers	a month ago

Our approach: *collaborative* dataset

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September 27, 2018

Dataset

Open Access

Serverless Literature Dataset

Spillner, Josef; Al-Ameen, Mohammed

Systematic database of literature around serverless computing and applications, cloud functions, Function-as-a-Service (FaaS) and closely related topics. Retrieved through keyword search from DBLP. Covering 2016-most of 2018. Evolving through open community curation.

2nd generation dataset, ODP converted to JSON files.

Preview

serverless-literature-dataset.zip

serverless-literature-dataset

- .gitignore 8 Bytes
- analysischeck.py 1.6 kB
- doc.txt 1.6 kB
- handcrafted
 - highlighted-map.png 529.4 kB
 - venn-inst.png 37.6 kB
 - venn-keywords.png 63.4 kB
 - wordcloud.png 441.4 kB
 - wordlist-50+.txt 7.9 kB
- missing-papers.txt 492 Bytes
- populate.py 1.9 kB
- serverless-literature-analysis.json 12.9 kB
- serverless-literature-base.json 3.2 kB
- serverless-literature-bibliographv.json 17.2 kB

105

views

27

downloads

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Indexed in

OpenAIRE

Publication date:

September 27, 2018

DOI:

[DOI 10.5281/zenodo.1436432](https://doi.org/10.5281/zenodo.1436432)

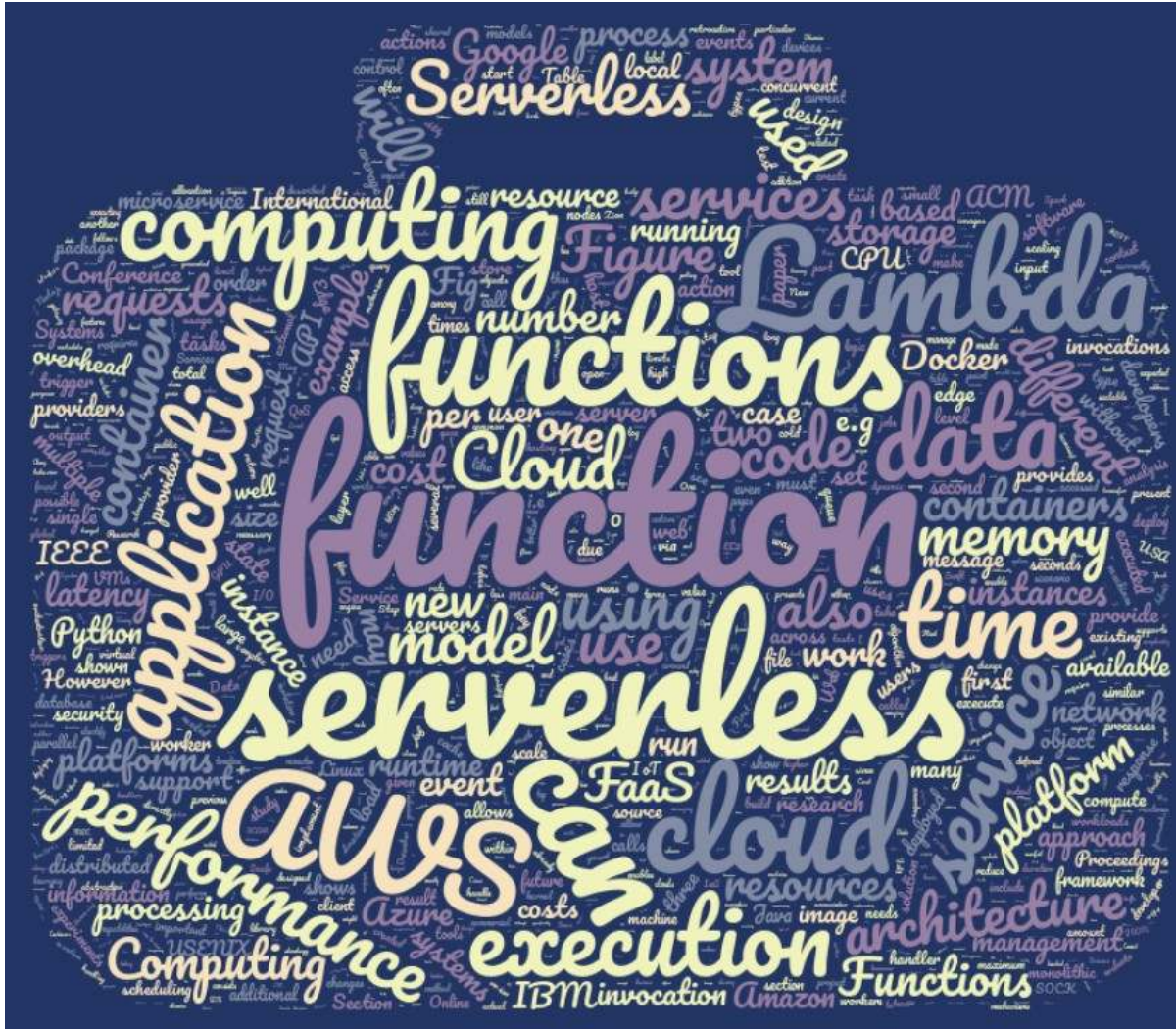
Keyword(s):

[faas](#) [cloud function](#) [lambda](#) [serverless](#)

Communities:

[Serverless Computing](#)

Goal: insights

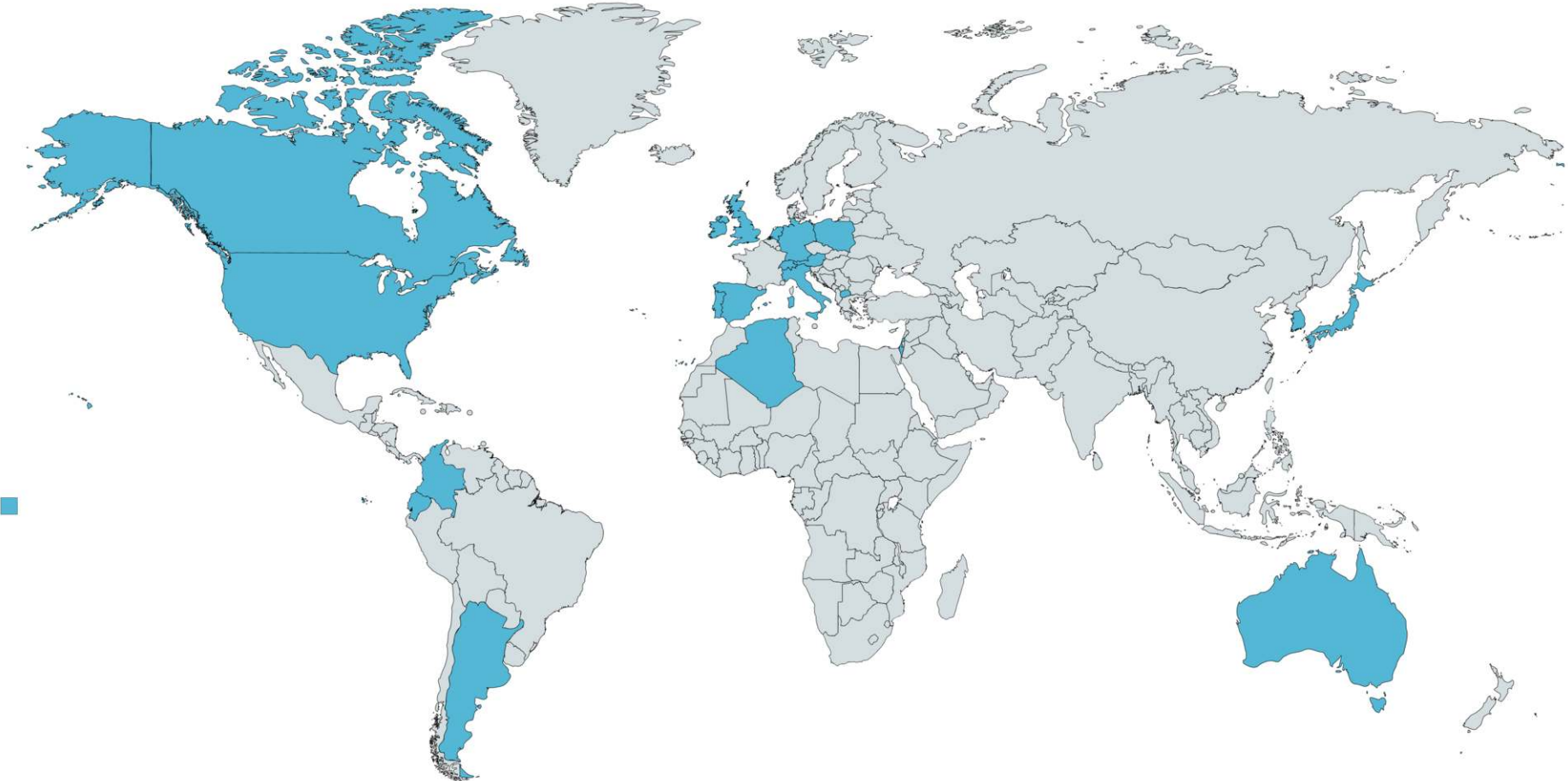


Producing the insights...

```
spio ... > research > lambda > serverless-literature-dataset.gitlab > python3 venue.py
!! unknown journal/conference WORKS@SC 2016
!! unknown journal/conference Proceedings of the 1st International Workshop on Mashups of Things and APIs - MOTA '16
!! unknown journal/conference The Essence of Software Engineering
!! unknown journal/conference Research Advances in Cloud Computing
!! unknown journal/conference High Performance Computing
!! unknown journal/conference Proceedings of the 2018 Conference of the North American Chapter of the Association for Computational Linguistics: Demonstrations
!! unknown journal/conference Procedia Computer Science
Counter({'IEEE': 20, 'ACM': 11, 'USENIX': 9, 'arXiv': 8, 'unknown': 7, 'Springer': 4, 'Elsevier': 1})
```



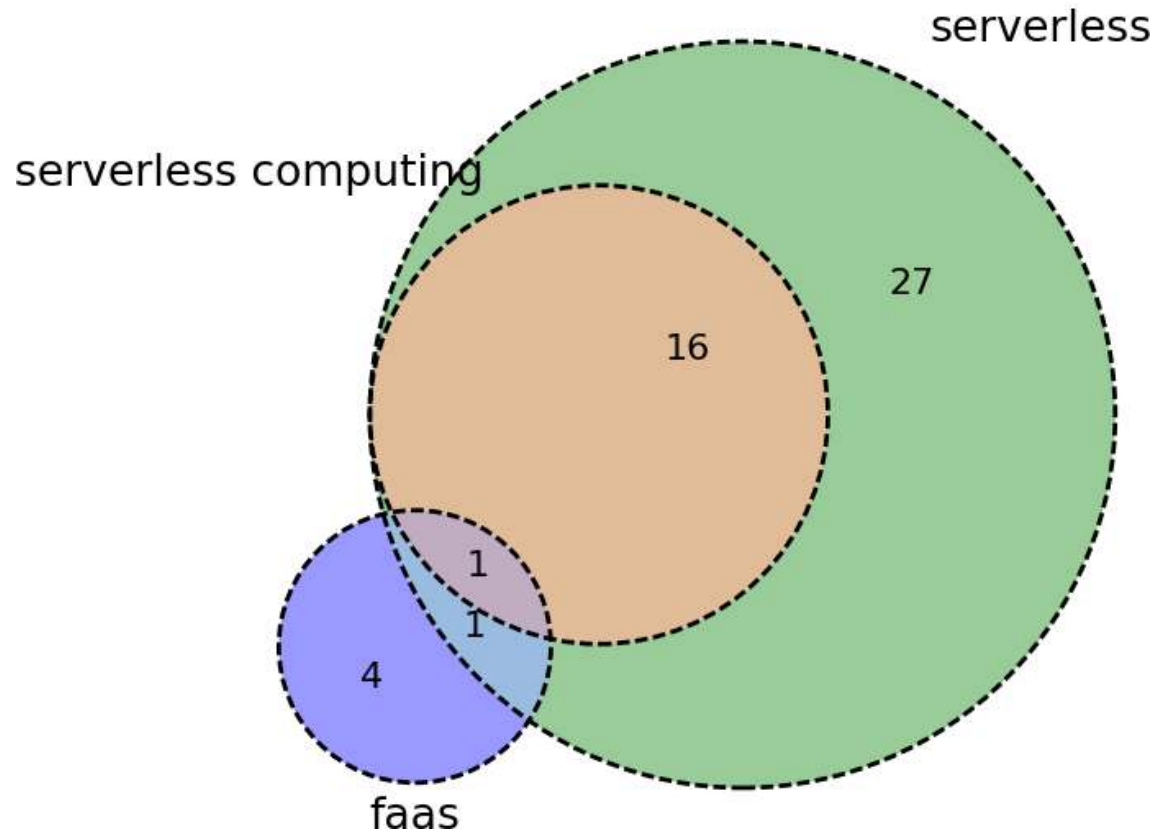
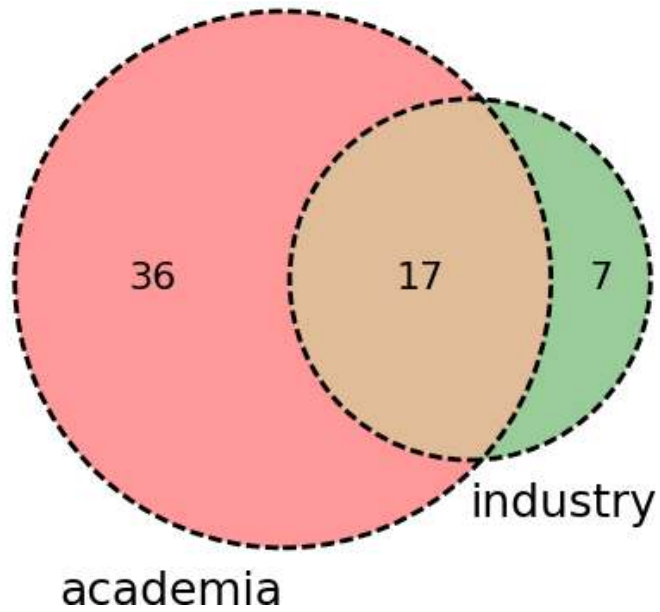
Insight: geographical distribution



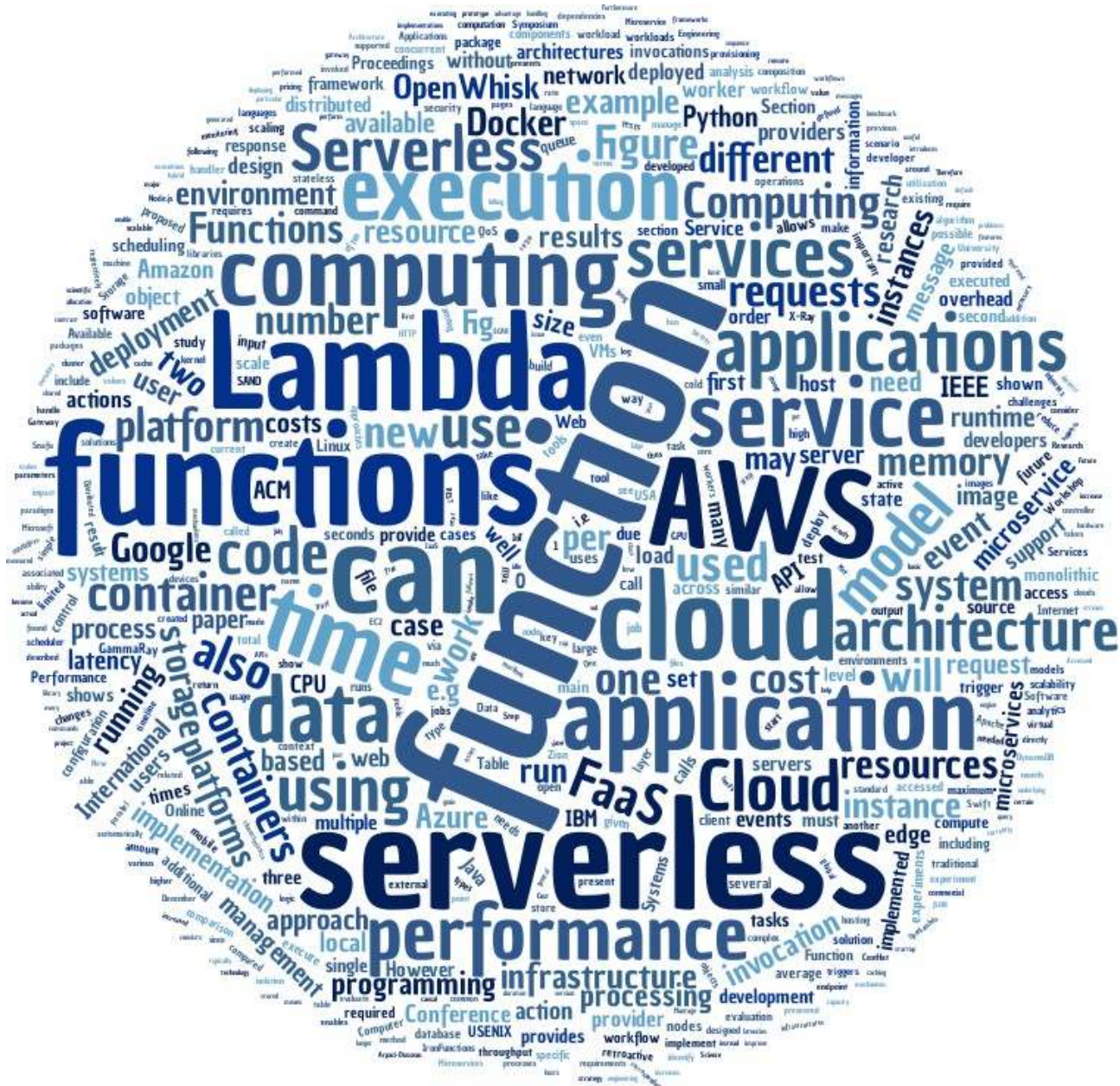
Created with mapchart.net ©



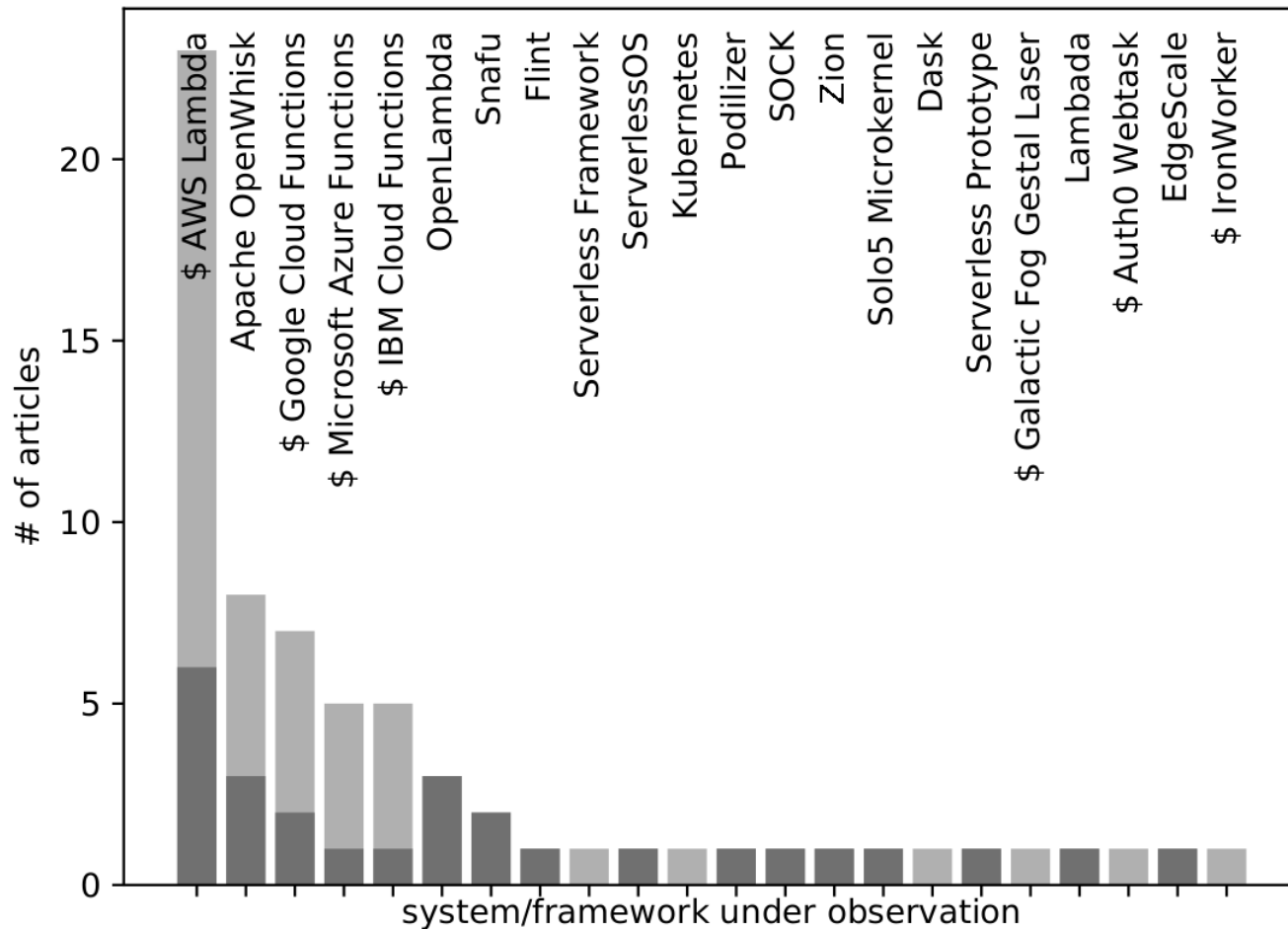
Insight: authors and terms



Insight: term clouds



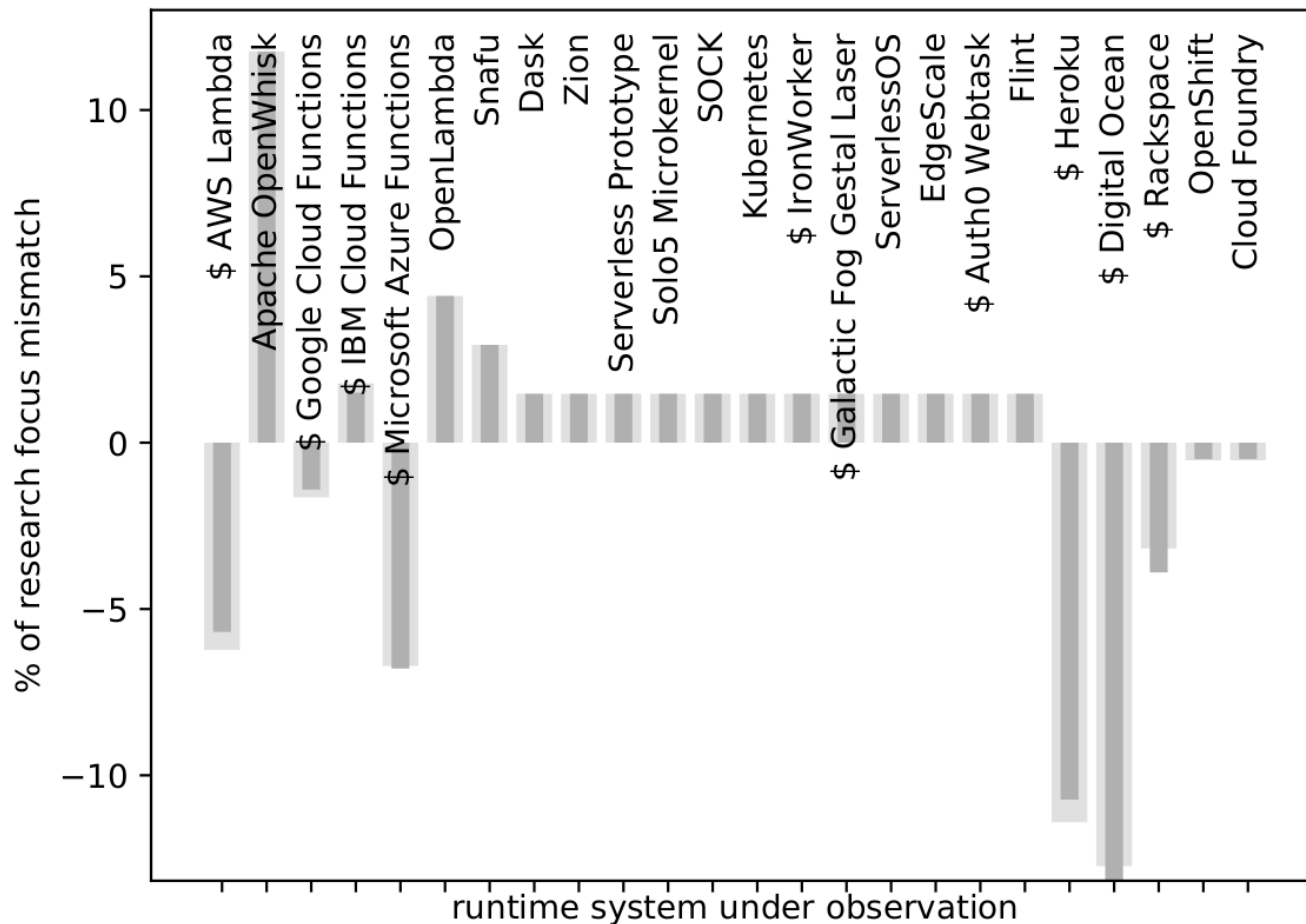
Insight: covered technologies



* dark: author == developer



Insight: industry-academia mismatch



* dark: experienced developers



More insights...

Year	Publications	Notes
2016	7	
2017	26	
2018	27	partial; interpolated: ca. 45

Providers:

- Lambda 328x
- OpenWhisk 285x
- OpenLambda 88x

Terms:

- function 2936x
- coldstart <200x
- stateless <200x
- handler <200x

Publishing path	Publications
IEEE	20
ACM	11
USENIX	9
arXiv	8
(other)	7
Springer	4
Elsevier	1



Future insights...

Bibliometrics...

- Most productive researchers? institutions?

Timelines?

- e.g. function workflows, inexistent at first...
- configurations (e.g. 128 MB first, 8192 MB in 2020?)

Open {data, source, experiment notebooks}?



Conclusion

This work is:

- not a survey, but rather a dataset with kind-of-survey as side effect
- collaborative & long-lasting
- hopefully insightful to you!

Links:

- <https://github.com/serviceprototypinglab/serverless-literature-dataset>
- <https://zenodo.org/record/1436432>
- (<https://zenodo.org/communities/serverless/>)

